

# Immersive Technology Fuels Infantry Simulators

By Cheryl Pellerin

American Forces Press Service

WASHINGTON, May 13, 2011 – Rocket-propelled grenades explode, villagers scream in Arabic, squad members move together through the rough streets past animal pens and bazaar stalls, and the hot air carries local sounds and smells.

It's not Afghanistan's Helmand province. It's a 130,000-square-foot building on Marine Corps Base Camp Pendleton in southern California.

There, at the Infantry Immersion Trainer, a Defense Department program combines infrastructure, actors, and three-dimensional immersive technologies that replicate the sights, situations and smells of war in the Middle East to help Marines and soldiers make better, faster decisions on the ground.

M.K. Tribbie is oversight executive for the Future Immersive Training Environment, called FITE. The environment merges elements of virtual reality, computer gaming and virtual worlds into an interactive training tool that is being tested at several Marine Corps and Army bases around the country, Tribbie said.

The idea to build what essentially is a training simulator for ground troops, he added, came from Marine Corps Gen. James N. Mattis in 2008, when he led U.S. Joint Forces Command.

Mattis had been thinking for several years about the fact that ground forces at the infantry and squad levels had no access to the kind of immersive training and simulators routinely used by aviators, submarine and ship pilots, and even truck drivers, Tribbie said.

Mattis thought, he added, "that if we could put together that sort of capability, we could elevate the quality of training available to these ground forces so they could make better, faster, more ethical decisions in the complex and chaotic environment they fight in."

FITE was approved in 2008 to give individuals, leaders and small units a training capability that "makes their first contact with the enemy no worse than the last simulation they experienced," as the program's tagline goes.

"Our Army infantry, our special operations forces, our Marine infantry continue to learn too many of their grim skills in the unforgiving, chaotic and ethically bruising environment of their first close combat, where intimate killing is the norm," Mattis, who now commands the U.S. Central Command, says in a video that promotes the program.

U.S. Special Operations Command was interested in the technology, as were the Navy and Air Force. A major funder of the project was the Joint Improvised Explosive Device Defeat Organization, Tribbie said.

Beginning in early fiscal year 2009, FITE was built in two parts and demonstrated by 10- to 13-man squads. The first part used a helmet-mounted virtual-reality display system, a computer that squad members wore on their backs, a tactile feedback device they wore on their thighs, and an operationally representative weapon that looked and felt like the real thing, Tribbie said. Wearing this equipment, the squad stood in a large room on a gridded floor. If they walked in place, they moved forward in the training scenario.

In the demonstration, they were briefed on a mission that they were to carry out in the virtual environment.

"They see a virtual display right before their eyes," Tribbie said. "Wherever they look, they see each other, they see the virtual players for the mission, they see the full environment you would see if you were in a real environment, but everything's virtual."

The faces of each person in the squad were recreated digitally, he added, so when they see each other in the virtual scenarios they see the virtual faces of their squad mates.

"In that manner, they were seeing the virtual reality, hearing the virtual environment," he said, "and to a degree we had devices that emitted representative smells of the environment."

If one of the squad was hurt or shot while carrying out the mission, the device on his thigh delivered “a kind of mild electronic jolt to simulate that and help drive home the realism of the scenario,” Tribbie said.

“They really liked it,” he said of FITE Part 1, which was demonstrated in March 2009 at Marine Corps Base Camp Lejeune in North Carolina and at the Army’s Fort Benning in Georgia.

In the next step, the designers blended real and virtual environments in exercises called “facility-based mixed reality,” Tribbie said. They conducted these exercises at Camp Pendleton with participants and observers from the Army.

There, a few years earlier -- recognizing the power and value of mixed-reality training, Tribbie said -- the Marines built the Infantry Immersive Trainer.

It’s like a movie set, Tribbie added, with Pashtun-speaking role players, animatronic characters, interactive virtual projections called avatars and simulated battlefield effects.

Because the FITE technologies are very mature the services “are able to observe, assess and analyze what was demonstrated,” he said, before they spend a lot of money on such capabilities.

Tribbie said he expects further growth over the next few years.

“You’ll start seeing the services and even non-DOD entities like [federal] agencies begin to leverage more available and maturing immersive capabilities and technologies,” he predicted.

**Biographies:**

[Marine Corps Gen. James N. Mattis](#)

**Related Sites:**

[Joint Capability Technology Demonstrations Office, Office of the Under Secretary of Defense for Acquisition,](#)

[Technology and Logistics](#)

[Infantry Immersive Trainer, Marine Corps Base Camp Pendleton Combat Camera](#)

[Special](#)